

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of:

Masanobu SEKI *et al.*

Serial No.: NEW

Filed: August 7, 2001 (herewith)

For: TEMPERATURE CONTROL APPARATUS

PRELIMINARY AMENDMENT

Honorable Commissioner
of Patents and Trademarks
Washington, D.C. 20231

August 8, 2001

Dear Sir:

Prior to an examination on the merits, please amend the above-identified application as follows:

IN THE SPECIFICATION:

Please replace the two paragraphs beginning at page 7, line 14, with the following rewritten paragraphs:

-- To each of the inlet port and the outlet port of the cooling water passage of the cooling water heat exchanger 11, there is connected each connecting pipe 21. Each connecting pipe 21 is connected to one relay block 15 in a watertight manner by using a sealing member 14 conventionally used with heat exchangers, such as an O-ring or other elastic sealing member. By

using such a sealing member, it is possible to absorb the distortion that is caused by the thermal expansion or shrinkage of the heat exchanger. In addition, the connecting pipe 21 is tapered in the vicinity of its inlet or outlet port to prevent the heat exchange unit 10 from moving more than a set amount. The tapered structure of the connecting pipe 21 may be replaced by a stopper for preventing the heat exchange unit 10 from moving more than a set amount. --

-- As shown in Fig. 2B, the eight connecting pipes 21, as connected to the four cooling water heat exchangers 11 of the two heat exchange units 10, are individually connected to the eight relay blocks 15. Moreover, these eight relay blocks 15 are fixed to one cooling water passage block 16 which is fixed in the casing 1. As shown in Fig. 1, the relay blocks 15, while connected to the other two heat exchange units, are also fixed to the same cooling water passage block 16. Here, the length of the connecting pipe 21 is made substantially equal to or slightly shorter than the spacing between the cooling water heat exchanger 11 and the cooling water passage block 16. In addition, the length of the connecting pipe 21 is longer than the spacing between the heat exchanger 14 and the relay blocks 15 plus the width of the sealing member 14. When the heat exchange unit needs replacement, therefore, a defective heat exchange unit can be easily replaced by a new one by removing the relay block 15 connected to the defective heat exchange unit from the cooling water passage block 16. The connecting pipes 22, heat exchanger 12, passage block 19, relay blocks 18, and sealing member 28, have the same structure and

arrangement with the resulting same function. Namely, the length of the connecting pipe 22 is made substantially equal to or slightly shorter than the spacing between the circulating liquid heat exchanger 12 and the cooling water passage block 19. In addition, the length of the connecting pipe 22 is longer than the spacing between the heat exchanger 12 and the relay blocks 18 plus the width of the sealing member 28.

After page 10, after line 12, please insert the following new paragraph:

-- In the present invention the expression "the length of the connecting pipe is substantially equal to or slightly shorter than the spacing between the heat exchanger and the passage block," as used in this application, means that the connecting pipe (21, 22) has a length relative to the distance between the edges of the respective heat exchanger (11, 12) and respective passage block (16, 19), which length is from 80% of the distance up to 105% of the distance between the edges of the heat exchanger (11, 12) and the respective passage block (16, 19) as these items are shown in Figs. 1 and 2B and elsewhere in the present specification disclosure. In addition, the expression "the length of the connecting pipe (21, 22) is longer than the spacing between the respective heat exchanger (11, 12) and the respective relay blocks (15, 18) plus the width of the respective sealing member (14, 28)," as used in this application, means that the length of the connecting pipe (21, 22) is greater than the sum of the distance between the edges of the respective heat exchanger (11, 12) and the respective relay block (15, 18) added to the width of the respective sealing member (14,

28), as these items are shown in Figs. 1 and 2B and elsewhere in the present specification disclosure. --

IN THE ABSTRACT OF THE DISCLOSURE:

Please replace the Abstract of the Disclosure, which appears on page 14 of the specification, with the following rewritten Abstract of the Disclosure:

-- ABSTRACT OF THE DISCLOSURE

A temperature control apparatus which is easy to replace a heat exchange unit to enhance the maintainability and the space efficiency and which can absorb the thermal expansion/shrinkage of a heat exchanger is provided. The temperature control apparatus comprises: a heat exchanger 11 having a passage 31 for passing a fluid; a connecting pipe 21 connected to the passage of the heat exchanger; a passage block 16 having a passage for passing the fluid to the heat exchanger; a relay block 15 for forming a passage between the passage of the passage block and the connecting pipe; and sealing means 14 for connecting the connecting pipe movably to the passage of the relay block. In the temperature control apparatus, the length of the connecting pipe 21 is made substantially equal to or slightly shorter than the spacing between the heat exchanger 11 and the passage block 16. --

IN THE CLAIMS:

Please cancel Claims 1-3 without prejudice or disclaimer of the subject matter set forth therein.

Please add the following new claims:

-- 4. A temperature control apparatus comprising:

a temperature controlling heat exchanger having a passage for passing a temperature controlling fluid;

a connecting pipe connected to the passage of said temperature controlling heat exchanger;

a first block having a passage for passing a temperature controlling fluid to said temperature controlling heat exchanger;

a second block for forming a passage between the passage of said first block and said connecting pipe; and

in the sealing member for connecting said connecting pipe movably to the passage of said second block,

wherein a length of said connecting pipe is made substantially equal to or slightly shorter than a distance between said temperature controlling heat exchanger and said first block, and the length of said connecting pipe is longer than a sum of a distance between said temperature controlling heat exchanger and said second block added to a width of said sealing member. --

-- 5. A temperature control apparatus comprising:

a temperature controlled heat exchanger having a passage for passing a temperature controlled fluid;

a connecting pipe connected to the passage of said temperature controlled heat exchanger;

a first block having a passage for passing a temperature controlled fluid to said temperature controlled heat exchanger;

a second block for forming a passage between the passage of said first block and said connecting pipe; and

a sealing member for connecting said connecting pipe movably to the passage of said second block,

wherein a length of said connecting pipe is made substantially equal to or slightly shorter than a distance between said temperature controlled heat exchanger and said first block, and the length of said connecting pipe is longer than a sum of a distance between said temperature controlled heat exchanger and said second block added to a width of said sealing member. --

-- 6. A temperature control apparatus comprising:

a heat exchange unit for exchanging the heat between a temperature controlling heat exchanger having a passage for passing a temperature controlling fluid and a temperature controlled heat exchanger having a passage for passing a temperature controlled fluid;

a first connecting pipe connected to the passage of said temperature controlling heat exchanger;

a first block having a passage for passing a temperature controlling fluid to said temperature controlling heat exchanger;

a second block for forming a passage between the passage of said first block and said first connecting pipe;

a first sealing member for connecting said first connecting pipe movably to the passage of said second block;

a second connecting pipe connected to the passage of said temperature controlled heat exchanger;

a third block having a passage for passing the temperature controlled fluid to said temperature controlled heat exchanger;

a fourth block for forming a passage between the passage of said third block and said second connecting pipe; and

a second sealing member for connecting said second connecting pipe movably to the passage of said fourth block,

wherein a length of said first connecting pipe is made substantially equal to or slightly shorter than a distance between said temperature controlling heat exchanger and said first block, and the length of said first connecting pipe is longer than a sum of a distance between said temperature controlling heat exchanger and said second block added to a width of said first sealing member, and

wherein the length of said second connecting pipe is made substantially equal to or slightly shorter than a distance between said temperature controlled heat exchanger and said third block, and the length of said second connecting pipe is longer than a sum of a distance between said temperature controlled heat exchanger and said fourth block added to a width of said second sealing member. --

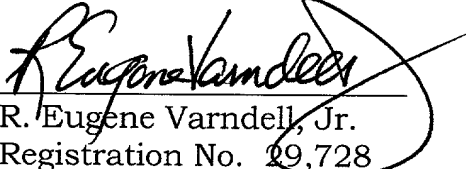
REMARKS

The specification and claims were amended above to better define invention. The Abstract of the Disclosure was amended to be a single paragraph. Attached hereto is a marked-up version of the changes made to the specification and Abstract of the Disclosure by the current amendment. The attached pages are captioned "**VERSION WITH MARKINGS TO SHOW CHANGES MADE.**"

New Claims 4-6 correspond to canceled Claims 1-3. Early consideration and allowance of Claims 4-6 are respectfully requested.

In the event any additional fees are due, please charge our Deposit
Account No. 22-0256.

Respectfully submitted,
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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

The two paragraphs beginning at page 7, line 14, were amended as follows:

-- As shown in Fig. 2B, the eight connecting pipes 21, as connected to the four cooling water heat exchangers 11 of the two heat exchange units 10, are individually connected to the eight relay blocks 15. Moreover, these eight relay blocks 15 are fixed to one cooling water passage block 16 which is fixed in the casing 1. As shown in Fig. 1, the relay blocks 15, [as] while connected to the other two heat exchange units, are also fixed to the same cooling water passage block 16. Here, the length of the connecting pipe 21 is made substantially equal to or slightly shorter than the spacing between the cooling water heat exchanger 11 and the cooling water passage block 16. In addition, the length of the connecting pipe 21 is longer than the spacing between the heat exchanger 14 and the relay blocks 15 plus the width of the sealing member 14. When the heat exchange unit [is troubled] needs replacement, therefore, [this troubled] a defective heat exchange unit can be easily replaced by a new one by removing the relay block 15 connected to the [troubled] defective heat exchange unit from the cooling water passage block 16. The connecting pipes 22, heat exchanger 12, passage block 19, relay blocks 18, and sealing member 28, have the same structure and arrangement with the resulting same function. Namely, the length of the connecting pipe 22 is made

substantially equal to or slightly shorter than the spacing between the circulating liquid heat exchanger 12 and the cooling water passage block 19.
In addition, the length of the connecting pipe 22 is longer than the spacing between the heat exchanger 12 and the relay blocks 18 plus the width of the sealing member 28.

IN THE ABSTRACT OF THE DISCLOSURE:

The Abstract of the Disclosure, which appears on page 14 of the specification, was amended by removing a carriage return as follows:

-- ABSTRACT OF THE DISCLOSURE

A temperature control apparatus which is easy to replace a heat exchange unit to enhance the maintainability and the space efficiency and which can absorb the thermal expansion/shrinkage of a heat exchanger is provided. [

]The temperature control apparatus comprises: a heat exchanger 11 having a passage 31 for passing a fluid; a connecting pipe 21 connected to the passage of the heat exchanger; a passage block 16 having a passage for passing the fluid to the heat exchanger; a relay block 15 for forming a passage between the passage of the passage block and the connecting pipe; and sealing means 14 for connecting the connecting pipe movably to the passage of the relay block. In the temperature control apparatus, the length of the connecting

